

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)


(PCT Article 36 and Rule 70)

REC'D 11 OCT 2005

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Applicant's or agent's file reference CDK2175		FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/GB2004/002656		International filing date (day/month/year) 21.06.2004	Priority date (day/month/year) 20.06.2003	
International Patent Classification (IPC) or national classification and IPC C02F1/50, A01N61/00, A01N57/34				
Applicant RHODIA CONSUMER SPECIALTIES LIMITED et al.				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau) a total of 8 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input checked="" type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input checked="" type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand 20.04.2005		Date of completion of this report 07.10.2005		
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer Serra, R Telephone No. +49 89 2399-5976		



**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/GB2004/002656

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-20 as originally filed

Claims, Numbers

1-42 filed with telefax on 25.05.2005

Drawings, Sheets

1/4-4/4 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/GB2004/002656

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 40-42

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for the said claims Nos. 40-42

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form

☐ has not been furnished

☐ does not comply with the standard

the computer readable form

☐ has not been furnished

☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.

☐ See separate sheet for further details

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/GB2004/002656

Box No. IV Lack of unity of invention

1. ☒ In response to the invitation to restrict or pay additional fees, the applicant has:
- ☐ restricted the claims.
 - ☒ paid additional fees.
 - ☐ paid additional fees under protest.
 - ☐ neither restricted nor paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is
- ☐ complied with.
 - ☒ not complied with for the following reasons:
see separate sheet
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☐ all parts.
 - ☒ the parts relating to claims Nos. 1-39 .

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	11-14, 36-39
	No: Claims	1-10 15-35
Inventive step (IS)	Yes: Claims	
	No: Claims	1-39
Industrial applicability (IA)	Yes: Claims	1-39
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item IV.

As a consequence of the lack of unity between claims 1- 10 and 11-39 mentioned in the communication attached to the partial search report and the fact that the further search revealed further prior art that gives evidence of a further lack of unity "a posteriori" within the group of claims 11-39. No form 405 was issued because of the impending limit dates.

Re Item V.

1 The following documents are referred to in this communication:

- D1: GB-A-1 221 550 (HOECHST AG) 3 February 1971 (1971-02-03)
- D2: EP-A-1 080 641 (NALCO CHEMICAL CO) 7 March 2001 (2001-03-07)
- D3: WO 99/33345 A (JONES CHRISTOPHER RAYMOND ; ALBRIGHT & WILSON UK LTD (GB); TALBOT ROBE) 8 July 1999 (1999-07-08)
- D4: US-A-4 673 509 (DAVIS KEITH P ET AL) 16 June 1987 (1987-06-16)

- 1.1 Document D1 discloses (example 2) the use of dinitro phenol (2,4, dinitro phenol is an uncoupling agent as described by the applicant), in an amount of 5 mg/l for controlling biomass in an aqueous system and is therefore suitable for use in an aqueous system.
- 1.2 Document D2 discloses (paragraphs 2, 22 and 23, claim 15) the use of tetrakis hydroxy methyl phosphonium sulphate (that is an uncoupling agent corresponding with the formulas I and III of claim 15 of the present demand), in combination with another biocide and surfactants, for controlling biological growth in an industrial aqueous system.
- 1.3 Document D3 discloses (claims 1 and 10) the use of "THP" together with a condensate of THP and dicyandiamide, where "THP" indicates tetrakis (hydroxy methyl) phosphonium salts together with their parent base, tris (hydroxy methyl) phosphine as (that is an uncoupling agent corresponding with the formulas I, II and III of claim 15 of the present demand), in combination with surfactants, for controlling biological growth in an industrial aqueous system.
- 1.4 Document D4 discloses (claims 1 and 4) the use of tetrakis (hydroxy methyl) phosphonium sulphate, chloride or phosphate (that is an uncoupling agent corresponding with the formulas I and III of claim 15 of the present demand), for controlling biological growth in an industrial aqueous system. Where 1-1000 ppm

of biocide is used (claim 7)

2 INDEPENDENT CLAIM 1

2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

2.2 DEPENDENT CLAIMS 2-23

Dependent claims 2-10, 15-23 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and inventive step (Article 33(2) PCT).

3 INDEPENDENT CLAIM 24

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 24 is not new in the sense of Article 33(2) PCT.

4 INDEPENDENT CLAIM 25

4.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 25 is not new in the sense of Article 33(2) PCT.

4.2 DEPENDENT CLAIMS 26-39

Dependent claims 26-39 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty or inventive step (Article 33(2) PCT).

21

CLAIMS

1. The use of a water-soluble biocide as an uncoupling agent at an effective amount to control bacterial biomass in an aqueous system, *wherein the biocide is suitable for use in aqueous systems due to not having high environmental toxicity.*
2. The use of a water-soluble biocide as an uncoupling agent as claimed in claim 1 in which the effective amount of the uncoupling agent is up to 5000 mg/l.
3. The use of a water-soluble biocide as an uncoupling agent as claimed in claim 2 in which the effective amount of the uncoupling agent is up to 3000 mg/l.
4. The use of a water-soluble biocide as an uncoupling agent as claimed in claim 3 in which the effective amount of the uncoupling agent is up to 1000 mg/l.
5. The use of a water-soluble biocide as an uncoupling agent as claimed in claim 4 in which the effective amount of the uncoupling agent is from 0.005mg/l to 500mg/l.
6. The use of a water-soluble biocide as an uncoupling agent as claimed in claim 5 in which the effective amount of the uncoupling agent is from 0.01mg/l to 300mg/l.
7. The use of a water-soluble biocide as an uncoupling agent as claimed in claim 6 in which the effective amount of the uncoupling agent is from 0.05mg/l to 100mg/l.

22

8. The use of a water-soluble biocide as an uncoupling agent as claimed in claim 3 in which the effective amount is from 0.1mg/l to 10mg/l.

5 9. The use of a water-soluble biocide as an uncoupling agent as claimed in claim 8 in which the effective amount of the uncoupling agent is from 0.5mg/l to 7.5mg/l.

10 10. The use of a water-soluble biocide as an uncoupling agent as claimed in claim 9 in which the effective amount of the uncoupling agent is from 1mg/l to 5mg/l.

15 11. The use of a water-soluble biocide as an uncoupling agent as claimed in claim 1 in which the effective amount of the uncoupling agent is from 0.1mg to 10000mg per gram of sludge solids in the aqueous system.

20 12. The use of a water-soluble biocide as an uncoupling agent as claimed in claim 11 in which the effective amount of the uncoupling agent is from 0.5mg to 1000mg per gram of sludge solids in the aqueous system.

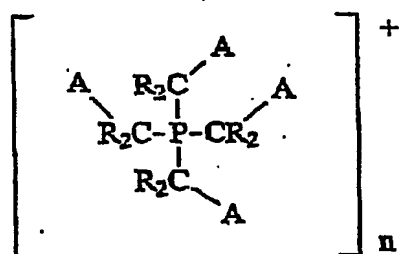
25 13. The use of a water-soluble biocide as an uncoupling agent as claimed in claim 12 in which the effective amount of the uncoupling agent is from 1mg to 500mg per gram of sludge solids in the aqueous system.

14. The use of a water-soluble biocide as an uncoupling agent as claimed in claim 13 in which the effective amount of the uncoupling agent is from 5mg to 100mg per gram of sludge solids in the aqueous system.

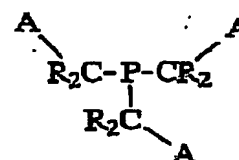
30

23

15. The use of a water-soluble biocide as an uncoupling agent as claimed in any one of the preceding claims in which the water-soluble biocide comprises an alkyl substituted phosphonium compound of formula (I) or an alkyl substituted phosphine of formula an alkyl-substituted phosphine of formula (II) ^{or} and a condensate of formula (III):



(I)



(II)

10



(III)

15

wherein:

X is an anion;

n is the valency of X represented by m;

each A can be the same or different and is selected from OH, OR, SO₃R,

- 20 PO₃R₂, COOH, COOR, SO₃H; PO₃H₂, CH₂COOH, substituted alkyl, aryl and substituted amino groups;

each R, and each R in each A group, is independently selected from hydrogen, a C₁ to C₂₀ alkyl, aryl, substituted alkyl or aryl, carboxy or carboxy ester; wherein each CR₂ group may be the same or different, and

- 5 R'' is a divalent hydrocarbon radical having from 2-20 carbon atoms and is optionally substituted with one or more substituents selected from the group consisting of halogen, hydroxy, carboxy, amino, alkylamino, or PR¹_nCH₂OH groups or interrupted by one or more ether or carbonyl linkages;

10

each R¹ is independently a monovalent hydrocarbon radical having from 1 to 25 carbon atoms and optionally substituted with one or more substituents selected from the group consisting of halogen, hydroxy, carboxy, amino, alkylamino, or PR¹_nCH₂OH groups or interrupted by one or more ether or carbonyl linkages, and

15

in formula (III) each v is 1 or 2, k is from 0 to 10 (e.g. from 1 to 10), x is the number of groups in the molecule having v=2 and X is a compatible anion of valency y such that the compound is water-soluble.

20

16. The use of a water-soluble biocide as an uncoupling agent as claimed in claim 15 wherein X is selected from the group consisting of chloride, sulphate, phosphate, acetate and bromide.

25

17. The use of a water-soluble biocide as an uncoupling agent as claimed in claim 15 or claim 16, wherein the alkyl-substituted phosphonium compound is tetrakis (hydroxymethyl) phosphonium sulphate.

30

18. The use of a water-soluble biocide as an uncoupling agent as claimed in claim 15 or claim 16 wherein the alkyl-substituted

phosphonium compound is selected from a group consisting of tetrakis (hydroxymethyl) phosphonium chloride, tetrakis (hydroxymethyl) phosphonium bromide, tetrakis (hydroxymethyl) phosphonium acetate and tetrakis (hydroxymethyl) phosphonium phosphate.

5

19. The use of a water-soluble biocide as an uncoupling agent as claimed in claim 15 in which the condensate is a condensate of tris(hydroxyorgano)phosphine with a nitrogen containing compound.

10 20. The use of a water-soluble biocide as an uncoupling agent as claimed in claim 19 in which the nitrogen containing compound is selected from the group consisting of a C₁₋₂₀ alkylamine, dicyandiamide, thiourea and guanidine.

15 21. The use of a water-soluble biocide as an uncoupling agent as claimed in any one of claims 1 to 14 wherein the uncoupling agent comprises a compound selected from the group consisting of quaternary ammonium compounds; polymeric quaternary ammonium compounds; polymeric biguanide hydrochlorides; tris(hydroxymethyl)nitromethane;
20 4,4-dimethylazolidine; phenoxypropanol; phenoxyethanol; glyoxal; acrolein; aldehydes; triazines; quaternary phosphonium compounds; 2-bromo-4-hydroxyacetophenone; carbamates; tertbutylazine; tetrachloro-2,4,6-cyano-3-benzonitrile; thiazole and isothiazole derivatives; compounds with activated halogen groups; bis chloromethyl
25 sulphone, and methylene bis thiocyanate.

22. The use of a water-soluble biocide as an uncoupling agent as claimed in any one of the preceding claims in which the water-soluble biocide is formulated with one or more of a surfactant; an antifoam; a
30 scale inhibitor; a corrosion inhibitor; a biocide, a flocculant, a dewatering aid and a dispersant.

23. The use of a water-soluble biocide as an uncoupling agent as claimed in any one of the preceding claims wherein the aqueous system is a wastewater treatment plant used for the treatment of industrial or municipal effluent.

5

24. An uncoupling agent comprising one or more conventional, water-soluble, water treatment biocide(s) as claimed in any one of claims 15 to 21.

10

25. A method for controlling the growth of bacterial biomass in an aqueous system comprising adding to, or contacting with, the aqueous system an effective amount of an uncoupling agent which is a water-soluble biocide as defined in any one of claims 15 to 21.

15

26. A method as claimed in claim 25 in which the method comprises contacting an effective amount of a water-soluble biocide directly with the bacterial biomass.

20

27. A method as claimed in claim 25 or claim 26 in which the effective amount of the water-soluble biocide added to the aqueous system is up to 5000 mg/l.

25

28. A method as claimed in claim 27 in which the effective amount of the water-soluble biocide added to the aqueous system is up to 3000 mg/l.

29. A method as claimed in claim 28 in which the effective amount of the water-soluble biocide added to the aqueous system is up to 1000 mg/l.

30

30. A method as claimed in claim 29 in which the effective amount of the water-soluble biocide added to the aqueous system is from 0.005 mg/l to 500 mg/l.

31. A method as claimed in claim 30 in which the effective amount of the water-soluble biocide added to the aqueous system is from 0.01 mg/l to 300 mg/l.

5 32. A method as claimed in claim 31 in which the effective amount of the water-soluble biocide added to the aqueous system is from 0.05 mg/l to 100 mg/l.

10 33. A method as claimed in claim 32 in which the effective amount of the water-soluble biocide is from 0.1 mg/l to 10mg/l.

34. A method as claimed in claim 33 in which the effective amount of the water-soluble biocide added to the aqueous system is from 0.5 mg/l to 7.5mg/l.

15 35. A method as claimed in claim 34 in which the effective amount of the water-soluble biocide added to the aqueous system is from 1mg/l to 5mg/l.

20 36. A method as claimed in claim 25 or claim 26 in which the effective amount of the water-soluble biocide added to the aqueous system is from 0.1 mg to 10000mg per gram of sludge solids in the aqueous system.

25 37. A method as claimed in claim 36 in which the effective amount of the water-soluble biocide added to the aqueous system is from 0.5 mg to 1000mg per gram of sludge solids in the aqueous system.

30 38. A method as claimed in claim 37 in which the effective amount of the water-soluble biocide added to the aqueous system is from 1 mg to 500mg per gram of sludge solids in the aqueous system.

39. A method as claimed in claim 38 in which the effective amount of the water-soluble biocide added to the aqueous system is from 5mg to 100mg per gram of sludge solids in the aqueous system.

5 40. The use of a water-soluble biocide as an uncoupling agent substantially as described herein with reference to the accompanying examples.

41. An uncoupling agent comprising a conventional, water-soluble,
10 water treatment biocide substantially as described herein with reference to the accompanying examples

42. A method of controlling the growth of a bacterial biomass in aqueous systems substantially as described herein with reference to the
15 accompanying examples.

INTERNATIONAL SEARCH REPORT

Int: al Application No
PCT/GB2004/002656

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C02F1/50 A01N61/00 A01N57/34

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C02F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 1 221 550 A (HOECHST AG) 3 February 1971 (1971-02-03) example 2	1-10
X	EP 1 080 641 A (NALCO CHEMICAL CO) 7 March 2001 (2001-03-07) paragraph '0023!; claim 15	11-17, 21-39
X	WO 99/33345 A (JONES CHRISTOPHER RAYMOND ; ALBRIGHT & WILSON UK LTD (GB); TALBOT ROBE) 8 July 1999 (1999-07-08) page 1, paragraph 2; claims 1,10	1-15,19, 20
X	US 4 673 509 A (DAVIS KEITH P ET AL) 16 June 1987 (1987-06-16) column 1, line 22 - line 23; claim 4	11-16,18

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *G* document member of the same patent family

Date of the actual completion of the international search

1 December 2004

Date of mailing of the international search report

13 4. 12. 04

Name and mailing address of the ISA

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Authorized officer

Serra, R

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2004/002656

Box II Observations where certain claims were found unsearchable (Continuation of Item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of Item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☒ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
11-39
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-10

use of a water soluble biocide in an amount up to 5000mg/l

2. claims: 11-39

use of a water soluble biocide in an amount depending on the
quantity of sludge solids

3. claim: 40

use of a biocide

4. claim: 41

uncoupling agent comprising a biocide

5. claim: 42

method of controlling a biomass

INTERNATIONAL SEARCH REPORT

Int. Application No
PCT/GB2004/002656

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 1221550	A	03-02-1971	DE 1280764 B	17-10-1968
			AT 284028 B	25-08-1970
			CH 507163 A	15-05-1971
			ES 356249 A1	01-04-1970
			FR 1579720 A	29-08-1969
			NL 6810273 A	23-01-1969
EP 1080641	A	07-03-2001	CA 2331431 A1	18-07-2002
			US 6419879 B1	16-07-2002
			AU 6395400 A	13-03-2001
			BR 0013130 A	17-12-2002
			EP 1080641 A2	07-03-2001
			JP 2003507326 T	25-02-2003
			NO 20004055 A	13-02-2001
			WO 0111954 A2	22-02-2001
			MX PA02000863 A	30-07-2002
			NZ 516903 A	28-05-2004
			ZA 200200056 A	03-01-2003
WO 9933345	A	08-07-1999	AT 226393 T	15-11-2002
			AU 736266 B2	26-07-2001
			AU 2275399 A	19-07-1999
			CA 2316363 A1	08-07-1999
			DE 69808968 D1	28-11-2002
			DE 69808968 T2	11-09-2003
			DK 1041885 T3	17-02-2003
			WO 9933345 A1	08-07-1999
			EP 1041885 A1	11-10-2000
			ES 2186252 T3	01-05-2003
			JP 2001527028 T	25-12-2001
			NO 20003267 A	02-08-2000
			NZ 505301 A	31-05-2002
			PT 1041885 T	31-03-2003
			TW 492840 B	01-07-2002
			US 6784168 B1	31-08-2004
US 4673509	A	16-06-1987	AT 32330 T	15-02-1988
			AU 563765 B2	23-07-1987
			AU 3247384 A	28-02-1985
			CA 1245126 A1	22-11-1988
			DE 3469162 D1	10-03-1988
			EP 0139404 A1	02-05-1985
			FI 843357 A ,B,	27-02-1985
			GB 2145708 A ,B	03-04-1985
			JP 1841615 C	12-05-1994
			JP 5050481 B	29-07-1993
			JP 60072807 A	24-04-1985
			KR 9109128 B1	31-10-1991
			NO 843399 A ,B,	27-02-1985
			ZA 8406638 A	27-11-1985

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